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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS

Appellant: Takao OGAWA et al.

Serial No: 09/394,514

Filed: September 13, 1999

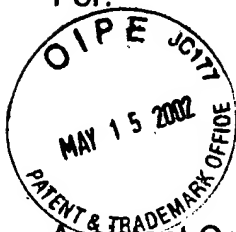
For: Electronic Toll Collection
System for Toll Road

Atty Docket: 0102/0074

Appeal No. **RECEIVED**

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GROUP 3600



APPELLANT'S BRIEF ON EX PARTE APPEAL

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

This is a brief for appealing the final rejecting of pending claims 1-7 of the above-identified application.

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REAL PARTY IN INTEREST

The real party in interest for this Appeal is Matsushita Electric Industrial, Co., Ltd. to whom the inventors assigned the invention per an Assignment recorded November 2, 1999 on Reel 010362, Frame 0556 of the Assignment Branch of the U.S. Patent and Trademark Office.

RELATED APPEALS AND INTERFERENCES

As far as is known, there are no appeals or interferences that would directly affect or be directly affected by or have a bearing on the Board's decision in the instant pending appeal.

STATUS OF CLAIMS

Claims 1-5 were presented for prosecution with the filing of the instant application on September 13, 1999. In response to an Office Action dated July 13, 2001, an amendment dated November 13, 2001 was filed in which claims 1 and 3 were amended, and new claims 6 and 7 added. An Office Action dated December 26, 2001 final rejected claims 1-7. Pending claims 1-7, as reproduced in the Appendix, are therefore being appealed herein.

STATUS OF AMENDMENTS

No amendment was filed subsequent to the Office Action dated December 26, 2001 in which the examiner final rejected pending claims 1-7.

SUMMARY OF THE INVENTION

The present invention relates to an electronic toll collection (ETC) system that comprises an antenna (13) having a predetermined directivity for providing a limited radio-communication service zone (17, 18). A vehicle sensor (11) for detecting a vehicle that reaches a predetermined position in the limited radio-communication service zone is also provided. By way of the antenna, a first means (12a, 13a) transmits a radio signal. Whether or not a radio response is received by the antenna is decided by a second means (13A). A third means (12A) then judges that an ETC vehicle is incoming, in cases where the second means (13A) decides that a response to the radio signal is received. A fourth means (12A) judges that there is a non-ETC vehicle incoming if the second means (13A) determines that a

response to the radio signal is not received while the vehicle sensor (11) detects a vehicle. [Figs. 5-7 and 9; page 9, line 13 to page 12, line 5; page 12, line 26 to page 15, line 12]

By thus determining the presence of a vehicle, by means of the vehicle sensor (11), and also whether or not a response is received from a vehicle, the instant invention ETC system is able to determine whether an incoming vehicle is an ETC vehicle or a non-ETC vehicle.

Claim 3 defines the limited radiocommunication service zone (17, 18) of the ETC system of claim 1 as having a length greater than the length of a vehicle and smaller than twice the length of the vehicle. [page 12, lines 6-10]

Claim 4 further defines the limited radio-communication service zone of claim 1 as having a length of about 6.5m along a lane. [page 12, lines 10-11]

Claim 5 recites that there is only one vehicle sensor (11) in the ETC system of claim 1. [page 15, lines 12-13]

Another embodiment of the ETC system of the instant invention is defined in claim 6 as comprising an antenna (13), a transceiver means (13A) working cooperatively with the antenna for outputting a radio signal at a given rating level to cover a limited radio-communication service zone (17, 18). There is also included in the ETC system defined in claim 6 a vehicle sensor (11) for detecting whether a vehicle has reached a predetermined position in the radio-communication zone. Working cooperatively with the antenna (13) is the transceiver means (13A) for detecting any response to the output radio signal from each vehicle that is detected by the vehicle sensor within the radio-communication zone. A processor means (12A) decides that a vehicle that has been detected by the vehicle sensor in the radio-communication zone is a non-ETC vehicle if no response to the radio signal sent out by the transceiver means (13A) is detected from the vehicle. [Figs. 5-7, 9; page 9, line 13 to page 12, line 5; page 12, line 26 to page 15, line 12]

Claim 7 further features the processor means (12A) of claim 6 determining a vehicle that has been detected by the vehicle sensor in the radio-communication zone (17, 18) to be an ETC vehicle if a radio response to the radio signal is detected from the vehicle.

By thus determining whether a response is received from a vehicle and also whether a vehicle has been detected to have reached a radio-communication zone, a more concise determination of whether an incoming vehicle is a ETC vehicle can be determined by the instant invention ETC system.

ISSUES

1. Although not directed to the merits of this case, the examiner has continued to require that Figs. 1-4 be designated as prior art. Whether those figures are to be so designated is issue 1.

2. The examiner has maintained her rejection of claims 1-5 and also rejected claims 6 and 7 under 35 U.S.C. 102(b) as being anticipated by Hassett et al. U.S. patent 5,406,275. Whether or not the anticipation rejection of claims 1-7 under Hassett is justified is the main issue in this appeal.

GROUPING OF CLAIMS

As noted above, dependent claims 3 and 5 each further define the invention of claim 1. For example, claim 3 defines with more specificity the radio-communication service zone, and claim 5 defines that there is only one sensor in the ETC system. Accordingly, Appellants respectfully submit that claims 3 and 5 each are separately patentable from claim 1.

As claim 6 defines a different embodiment from that of claim 1, claim 6 should be judged separately from the invention set forth in claim 1. Claim 7 depends from claim 6 and it defines that the vehicle is determined to be an ETC vehicle if a response to the radio signal is received and the vehicle is detected within the radio-communication zone by the sensor. Thus, claim 7 provides for a two prong decision made by processor means, which is different from the signal prong process made by the processor means in claim 6. Accordingly, Appellants respectfully submit that

claims 6 and 7 do not stand or fall together, as those claims are believed to be separately patentable.

ARGUMENT

Issue 1

Should Figs. 1-4 be labeled prior art?

Page 3, lines 3-5, of the specification of the in issue application state: "Fig. 1 is a perspective view of a tollgate in a background-art ETC system for a toll road which is not prior art against this invention." Further on page 3, lines 21-22, the following is disclosed: "Figs. 1, 2, and 3 show a tollgate in a background-art ETC system for a toll road which is not prior art against this invention."

Given that the examiner does recognize in the Office Action that Figs. 1-4 relate to the background, but not prior art of the instant invention (paragraph bridging pages 2-3 of Office Action dated December 26, 2001), Appellants would not object to the labeling of those figures as "Background Art", instead of "Prior Art". Such background art enables a better understanding of this invention. See page 3, lines 19-20.

Insofar as issue 1 is not directly related to the merits of this case, and therefore could be readily disposed of, if after the merits of the instant case, namely issue 2, has been addressed by the Board, and if still required by the examiner, Appellants would be happy to submit amended Figs. 1-4 with the legend "Background Art" added thereto.

Issue 2

Is each of claims 1-7 anticipated by Hassett et al. U.S. patent 5,406,275 (Hassett)?

It is well established that an anticipation rejection under 35 U.S.C. 102 requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. In re Anthony J. Robertson and Charles L. Scripps, 169 F.3d 743, 745, 49 USPQ2d 1949, 1951 (Fed.

Cir. 1999). The Robertson court further held that “If the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if that element is ‘inherent’ in its disclosure. To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill’ (cite omitted) Inherency, however, may not be established by probability or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” Id. at 167 F.3d 745, 49 USPQ2d 1951.

It is moreover well established that in constructing the meaning of a claim limitation, it is proper to look to the specification in order to interpret what the inventor intended by the claim term. Furthermore, when the claim limitation in issue involves a means plus function clause, proper claim interpretation requires that such claim “shall be construed to cover the corresponding structure, material or acts described in the specification or equivalents thereof.” 35 USC §112 P6; In re Bond, 910 F.2d 831, 833, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990). See also In re Iwahashi, 888 F.2d 1370, 1375 n.1, 12 USPQ2d 1908, 1912 n.1 (Fed. Cir. 1989). Furthermore, “The limitations which must be met by an anticipatory reference are those set forth in each statement of function.” RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1445 n.5, 221 USPQ 385, 389 n.5 (citing In re Mott, 557 F.2d 266, 269, 194 USPQ 305, 207 (CCPA 1977)) (Fed. Cir. 1984), cert. dismissed, 468 U.S. 1228 (1984).

Appellants respectfully submit that the anticipation rejection of pending claims 1-7 under Hassett is without merit insofar as Hassett fails to disclose each and every recited element, and the respective functions performed by those elements in each of the in issue claims.

In particular, claim 1 recites “a vehicle sensor for detecting a vehicle which reaches a predetermined position in the limited radio-communication service zone”, “second means for deciding whether or not a radio response to the radio signal is received via the antenna”, “third means for, in cases where the second means decides that a radio response to the radio signal is received, judging that there is an

ETC vehicle incoming", and "fourth means for, in cases where the vehicle sensor detects a vehicle while the second means decides that a radio response to the radio signal is not received, judging that there is a non-ETC vehicle incoming."

The ETC system of claim 1 therefore features: 1) a vehicle sensor for detecting whether a vehicle has reached a predetermined position in the radio-communication zone that is serviced by the antenna of the ETC system; 2) second means for determining whether a response to the radio signal output from the antenna of the ETC system is received; 3) third means for deciding that there is indeed an incoming ETC vehicle when a response to the output radio signal is received; and 4) fourth means for determining that a non-ETC vehicle is incoming if the vehicle sensor detects a vehicle and the second means decides that a response to the radio signal output from the antenna has not been received.

The Hassett system, in contrast, relates to determining whether an incoming vehicle is in a proper lane of a multiple lane toll plaza. For the Hassett system, every incoming vehicle is presumed to carry a vehicle transponder 28. So, too, each lane of the exemplar three lane toll plaza is equipped with a transmitter (18, 20, 22) that broadcasts a directional signal so as to set up a field pattern within each lane of the multi-lanes of the plaza. Each of the signals output from each of the stationary transceivers 18-22 has a field pattern such as that shown in Fig. 2. As disclosed in column 4, lines 21-32, the field pattern 26 output from each of the transceivers 18-22 is directed to oncoming traffic in that particular lane. By radiating known field patterns along each lane of the plaza roadway, the Hassett roadway is effectively divided into separate radiation field regions. See column 4, lines 33-51.

In addition to the overlapping field patterns from the transmitters 18-22, for the Hassett system, each of the incoming vehicles is equipped with its own vehicle transponder 28 that includes the components shown in Figs. 4A. In particular, transponder 28 includes a signal strength detection unit 76 that enables the transponder to receive the radiated signals from transmitters 18-22, and processes those signals to determine each particular signal output by each of the transmitters. By processing the signals from the various lane transmitters 18-22 to determine their relative strengths, comparing the measured strengths of the received signals and

further comparing the information to known antenna field strength patterns, each transponder can determine the lane position and the linear distance that the vehicle that carries the transponder is from the stationary receiver along that lane. The operation of the transponder for each of the vehicles of the Hassett system is given in column 8, lines 9-68.

The Hassett system is therefore directed to overcoming the problem of multi-pathing in a multi-lane roadway by correlating each stationary transmitter for each lane with a corresponding oncoming vehicle along that lane.

As the Hassett correlating process is mostly done by the vehicle transponder components (shown in Figs. 4A of Hassett), there is accordingly no sensor disclosed in the Hassett system for detecting the oncoming vehicle when the vehicle has reached a predetermined position in the field pattern broadcast by a transmitter. Indeed, no vehicle sensor is necessary for the Hassett system. And none is disclosed or suggested.

The examiner argued that the stationary transceiver in the Hassett system "functions as a vehicle sensor because the vehicle transceiver begins to receive signals only after [the vehicle] reaches the limited radio-communication zone. Once it reaches the limited radio-communication zone, the vehicle transceiver can send signals back to the stationary transceiver. By sensing that the signals are being received from vehicles that have to be within the limited radio-communication zone, the stationary transceiver knows that a vehicle is coming." [Page 8 of the Office Action dated December 26, 2001.]

The problem with the examiner's argument that the stationary transceivers 18-22 of the Hassett system can act as vehicle sensors makes sense only if each vehicle incoming to the toll plaza carries a transponder. If an oncoming vehicle is not equipped with a transponder 28, operating under the examiner's presupposition, the stationary transmitter in the Hassett system surely would fail miserably as a "vehicle sensor", as it does not even know that a vehicle is incoming. Therefore, the simple fact that Hassett fails to disclose a vehicle sensor as recited in claim 1 renders Hassett defective as an anticipation reference.

Yet Hassett also fails to disclose any "second means for deciding whether or not a radio response to the radio signal is received via the antenna", as recited in claim 1. This is apparent insofar as each of the incoming vehicles in the Hassett system is disclosed as carrying a transponder 28. It follows then that Hassett likewise fails to disclose any means for determining whether an incoming vehicle is an ETC or a non-ETC vehicle since it presupposes that every vehicle is equipped with a transponder and fails to disclose the above-noted "vehicle sensor" and "second means". Indeed, there is no disclosure in Hassett that there are components used for determining whether there is an incoming ETC vehicle once a radio response is received, or that an incoming vehicle is a non-ETC vehicle when that vehicle has been detected to have reached the predetermined position in the radio-communication service zone provided by the antenna.

In view of the above, Appellants respectfully submit that claim 1 is not anticipated by Hassett.

Appellants further respectfully submit that each of claims 3 and 5 recites limitations that are not present in the Hassett. To wit, the examiner relied on the disclosure in column 5, lines 18-21 for rejecting claim 3. Yet column 5, lines 18-21 state: "Those skilled in the art will appreciate that the invention can be practiced with other field strength patterns that indicate a position relative to a transmitting unit." There is nothing in the quoted passage that inherently suggests the claim 3 limitation "wherein the limited radio-communication service zone has a length greater than a length of a vehicle and smaller than twice the length of said vehicle." This is clear insofar as the field pattern radiated by each of the stationary transmitters of Hassett is meant to define a particular pattern so that when a vehicle enters the field, it can determine by means of its transponder the relative strength of that field pattern vis-a-vis the other field patterns overlapping it being radiated by the stationary transmitters located at the adjacent lanes. The field pattern being radiated by a stationary transmitter of the Hassett system is therefore not meant to be related to the length of a vehicle, as recited in claim 3.

Claim 5 recites one vehicle sensor being provided in the ETC system of the instant invention. No such vehicle sensor is disclosed in Hassett, the examiner's

assertion that the directional antenna disclosed in column 2, lines 55-56 that works in cooperation with the stationary transmitter is a vehicle sensor notwithstanding. Clearly, as discussed fully above, the function of the antenna in the Hassett system is not the same as the claimed vehicle sensor of the instant invention.

The same argument above with respect to claim 1 is equally applicable to claim 6. In particular, claim 6 recites the following limitations not met by Hassett: "a vehicle sensor (11) for detecting whether a vehicle has reached a predetermined position in said limited radio-communication zone", "said transceiver means (13A) further working cooperatively with said antenna for detecting radio response to said radio signal from each vehicle detected by said vehicle sensor within said radio-communication zone", and "processor means (12A) for deciding a vehicle that has been detected by said vehicle sensor in said radio-communication zone is a non-ETC vehicle if no radio response to said radio signal is detected from said vehicle."

Claim 7 recites the following limitation not found in Hassett: "wherein said processor means decides a vehicle that has been detected by said vehicle sensor within said radio-communication zone is an ETC vehicle if a radio response to said radio signal is detected from said vehicle."

In summation, simply put, Hassett does not disclose an ETC system that is capable of differentiating oncoming ETC and non-ETC vehicles. In fact, the Hassett system is impervious to any oncoming non-ETC vehicles.

In view of the foregoing, appellants respectfully submit that the anticipation rejection of claims 1-7 over Hassett is not sustainable. Accordingly, the reversal of the anticipation rejection of claims 1-7 is respectfully requested.

Respectfully submitted,



Louis Woo, RN 31,730
Law Offices of Louis Woo
1901 North Fort Myer Drive, Suite 501
Arlington, VA 22209
(703) 522-8872

Date: May 15 2002

APPENDIX

1. An ETC (electronic toll collection) system comprising:
 - an antenna having a predetermined directivity for providing a limited radio-communication service zone;
 - a vehicle sensor for detecting a vehicle which reaches a predetermined position in the limited radio-communication service zone;
 - first means for transmitting a radio signal via the antenna;
 - second means for deciding whether or not a radio response to the radio signal is received via the antenna;
 - third means for, in cases where the second means decides that a radio response to the radio signal is received, judging that there is an ETC vehicle incoming; and
 - fourth means for, in cases where the vehicle sensor detects a vehicle while the second means decides that a radio response to the radio signal is not received, judging that there is a non-ETC vehicle incoming.
2. An ETC system as recited in claim 1, wherein the first means comprises means for continuously transmitting the radio signal via the antenna.
3. An ETC system as recited in claim 1, wherein the limited radio-communication service zone has a length greater than a length of a vehicle and smaller than twice the length of said vehicle.
4. An ETC system as recited in claim 1, wherein the limited radio-communication service zone has a length of about 6.5 m along a lane.
5. An ETC system as recited in claim 1, wherein the vehicle sensor is only one in the ETC system.
6. An ETC (Electronic Toll Collection) system, comprising:
 - an antenna;

transceiver means working cooperatively with said antenna for outputting a radio signal at a given rating level to cover a limited radio-communication service zone;

a vehicle sensor for detecting whether a vehicle has reached a predetermined position in said limited radio-communication zone;

said transceiver means further working cooperatively with said antenna for detecting radio response to said radio signal from each vehicle detected by said vehicle sensor within said radio-communication zone; and

processor means for deciding a vehicle that has been detected by said vehicle sensor in said radio-communication zone is a non-ETC vehicle if no radio response to said radio signal is detected from said vehicle.

7. An ETC system of claim 6, wherein said processor means decides a vehicle that has been detected by said vehicle sensor in said radio-communication zone is an ETC vehicle if a radio response to said radio signal is detected from said vehicle.

CITATIONS

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In re Anthony J. Robertson and Charles L. Scripps,
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Technology Center 2100

Assistant Commissioner for Patents
Washington, D.C. 20231

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Sir:

GROUP 3600

Attached herewith please find a check in the amount of \$320.00 to accompany the filing of the Appeal Brief for the above-identified Application.

The Commissioner is hereby authorized to debit funds from Deposit Account No. 50-0501 if the amount of the herewith attached check is insufficient. Conversely, any overpayment reflected on the check should be credited to the same account. A duplicate copy of this letter is attached.

Respectfully submitted,

Louis Woo, Reg. No. 31,730
Law Offices of Louis Woo
1901 N. Fort Myer Drive, Suite 501
Arlington, Virginia 22209
Phone: (703) 522-8872

Date: May 15 2002